Zika Virus Disease Surveillance in U.S. States

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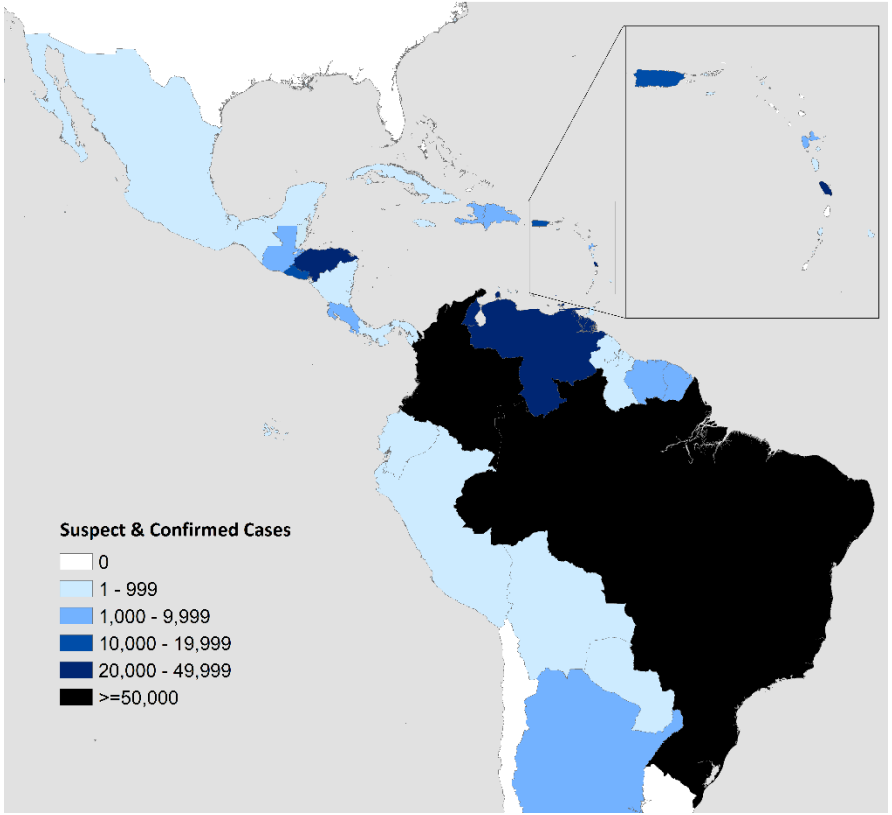
Objectives

- Update the epidemiology of Zika virus disease in the Americas and the United States
- Review the objectives and phased approach to Zika virus surveillance in the United States
- Discuss strategies to identify local mosquito-borne transmission of Zika virus, and define the size and scope of an outbreak

Zika Virus in the Americas

- In May 2015, the first locally-acquired cases in the Americas were reported in Brazil
- As of June 2, 2016, local transmission reported in 39 countries or territories in the Americas
- Further spread to other countries in the region is likely

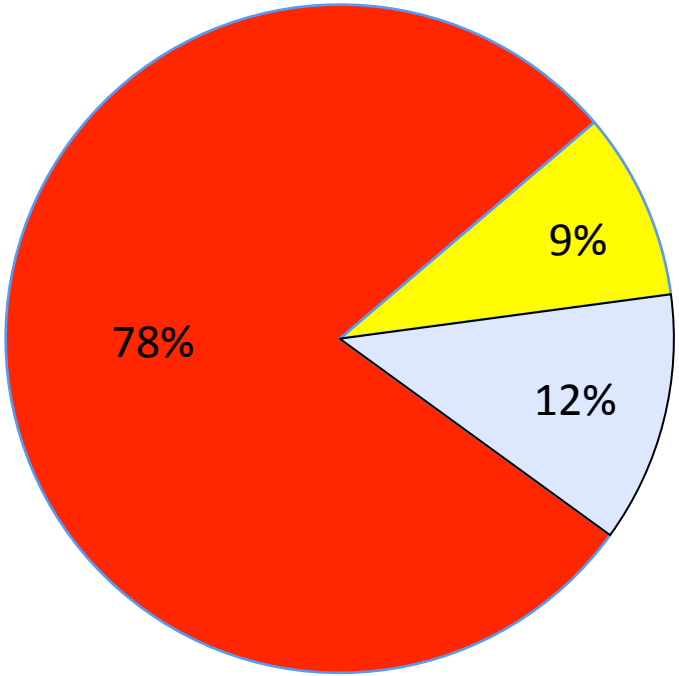
Suspected and Confirmed Locally Transmitted Zika Virus Disease Cases Reported to PAHO by Country in the Americas, Jan 2015–May 2016



Country	(N=415,993)*	
Brazil	194,263	(47%)
Colombia	87,355	(21%)
Venezuela	31,576	(8%)
Martinique	26,662	(6%)
Honduras	21,069	(5%)
Puerto Rico	11,705	(3%)
El Salvador	11,677	(3%)

*13% of cases are lab-confirmed

Suspected and Confirmed Locally Transmitted Zika Virus Disease Cases Reported to PAHO by Region in the Americas, Jan 2015–May 2016



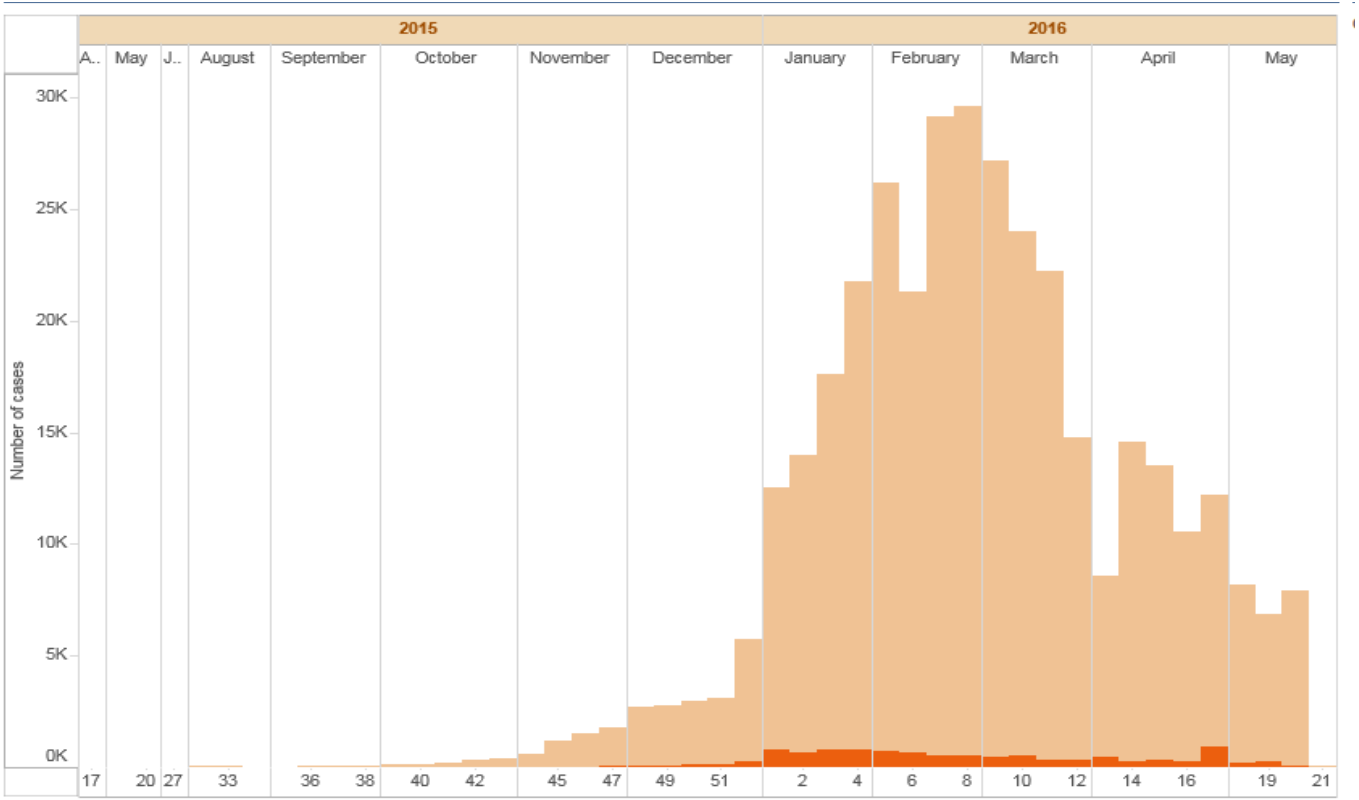
Central America

South America

Caribbean

N=415,993 suspected and confirmed cases

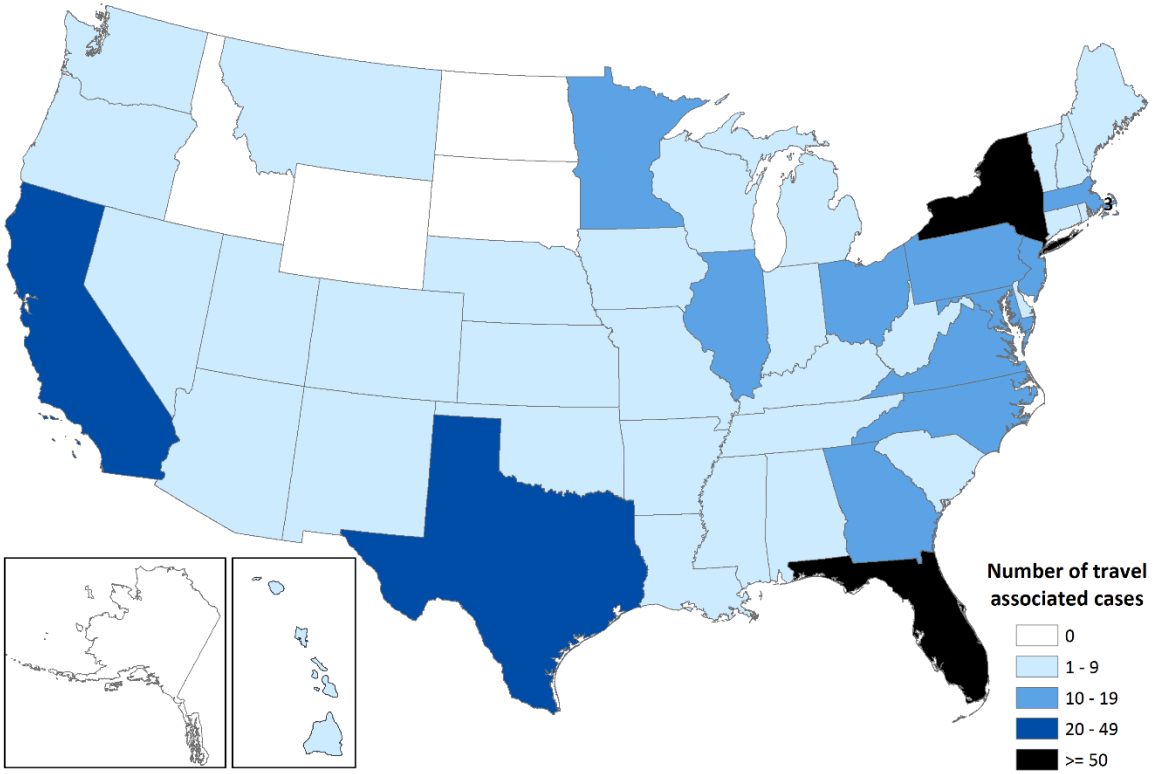
Suspected and Confirmed Locally Transmitted Zika Virus Disease Cases Reported to PAHO from the Americas by Week, Jan 2015–May 2016



Zika Virus in the United States

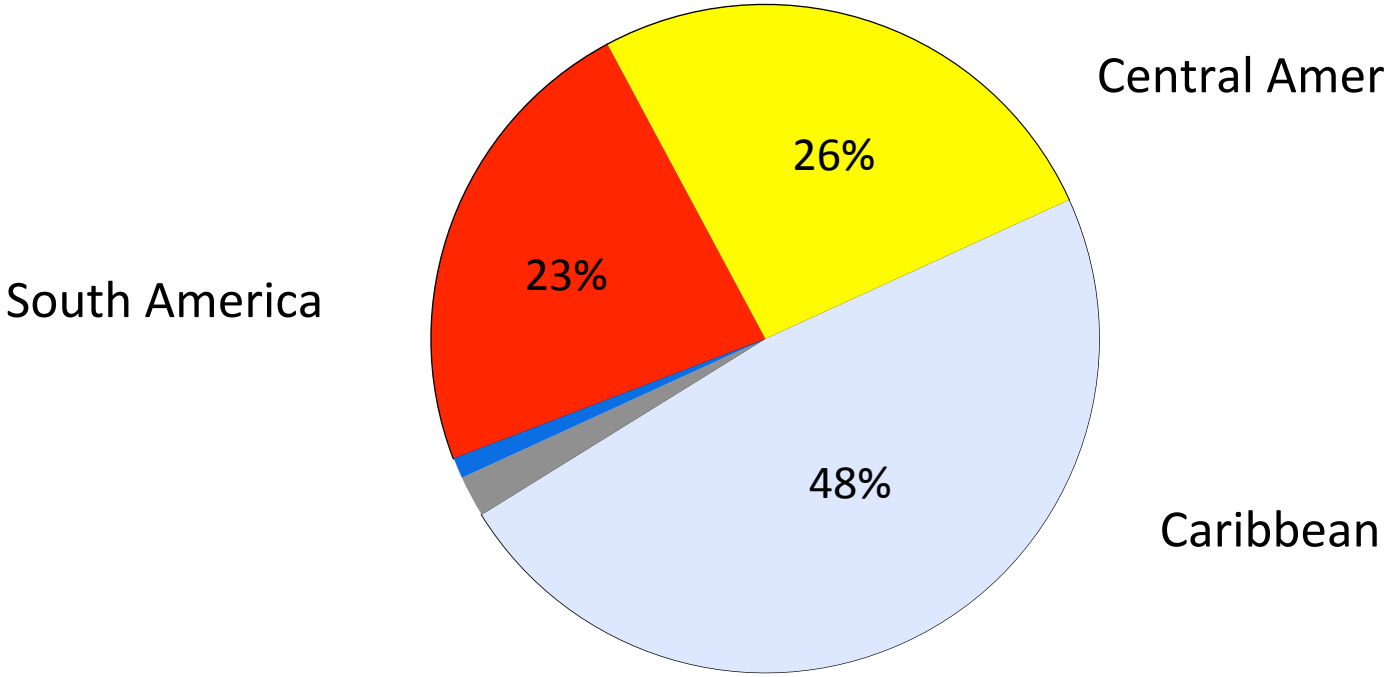
- Local mosquito-borne transmission of Zika virus has not been reported in the continental United States
- In 2011–2014, 11 lab-confirmed Zika virus disease cases identified in travelers returning to the U.S. from areas with local transmission
- With current outbreaks in the Americas, cases among U.S. travelers have increased substantially
- Imported cases may result in virus introduction and local spread in some areas of United States

State of Residence for U.S. Travel-associated Zika Virus Disease Cases Reported to ArboNET, Jan 2015–May 2016



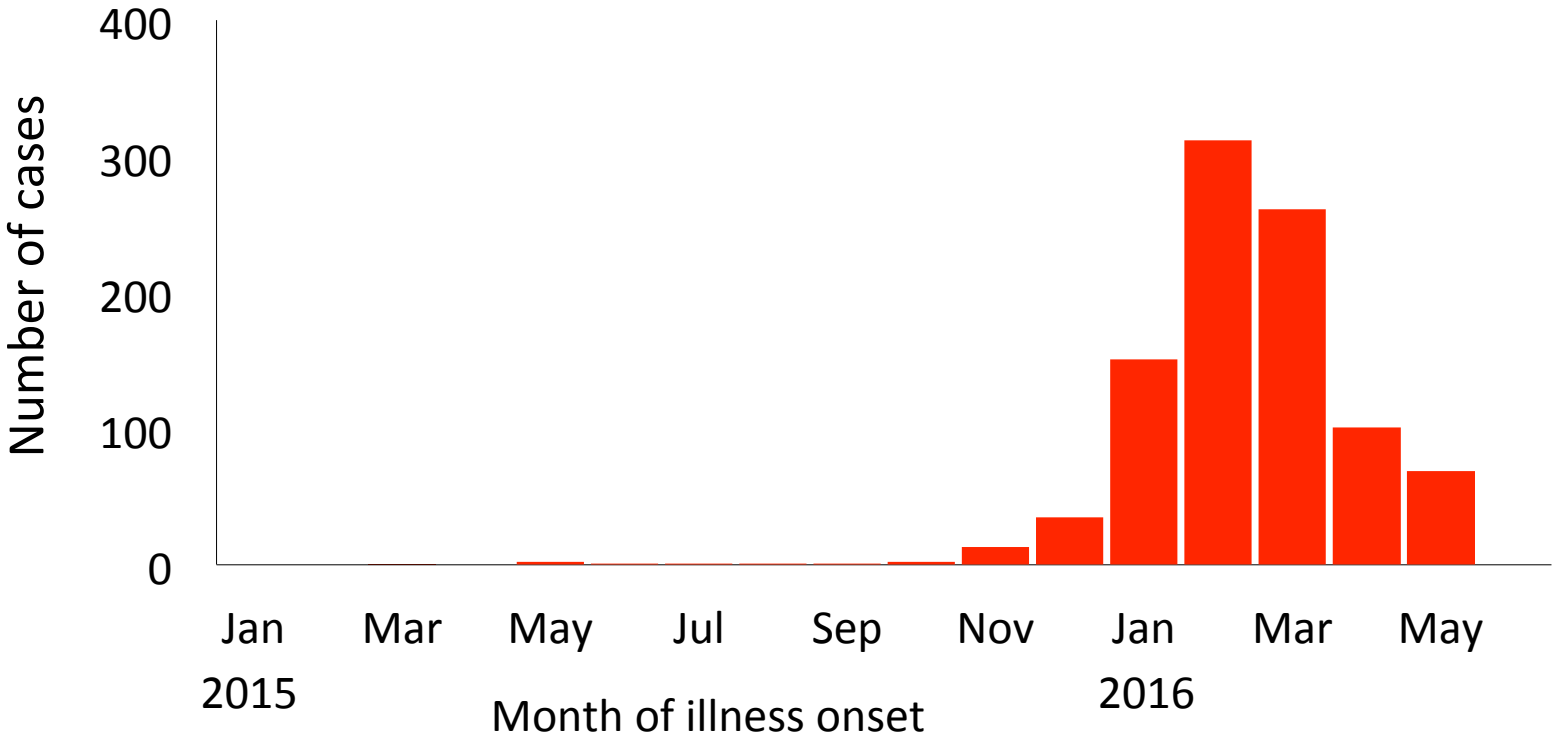
	(N=618)
NY	130 (21%)
FL	128 (21%)
CA	44 (7%)
TX	36 (6%)
MD	19 (3%)
PA	19 (3%)
VA	18 (3%)

Region Where Reported U.S. Travel-associated Zika Virus Disease Cases Were Acquired, Jan 2015–May 2016



N=591 laboratory-confirmed cases with reported place of travel

Month of Illness Onset of Reported U.S. Travel-associated Zika Virus Disease Cases, Jan 2015–May 2016



Objectives of Zika Virus Surveillance in the United States

- Identify and define areas with local mosquito-borne transmission
- Direct prevention and control efforts
- Identify and monitor infections in people at risk for poor outcomes
- Quantify and describe disease burden

Zika Virus Surveillance Phases

0. Pre-incident preparedness
1. Mosquito season
2. Limited local transmission in one geographic area
3. Widespread local transmission in one geographic area
4. Widespread local transmission in multiple geographic areas

Phase 0. Pre-incident Preparedness

- Assess risk areas, populations, and timing
- Educate healthcare providers and local public health officials
- Establish public health laboratory testing and surge capacity
- Discuss testing capacity and reporting with commercial laboratories
- Develop response plan with mosquito control districts
- Coordinate with blood collection agencies

Assessing Risk of Local Mosquito-borne Transmission

- *Aedes aegypti* or *Aedes albopictus* present and active in area
- Prior local transmission of dengue or chikungunya viruses
- Returning travelers with Zika virus infection
- Local population density and household infrastructure
- Limited vector control capacity

Phase 1. Mosquito Season

- Investigate and test suspected cases, and assess exposures
  - Recent travel
  - Sexual transmission
  - Blood transfusion/organ transplantation
  - Local mosquito-borne
- Respond to confirmed travel-associated cases
  - Vector evaluation and control around home
  - Limit subsequent mosquito exposures
  - Educate about sexual transmission and blood donation risks
- Monitor blood donor screening, where performed

Who to Test for Zika Virus Infection

- Patient with fever, rash, arthralgia, or conjunctivitis
  - Onset during or within 2 weeks of travel to an area with ongoing transmission, OR
  - Epidemiologic link to laboratory-confirmed case through vertical transmission, sexual contact, or association in time and place
- Offer testing to asymptomatic pregnant women
  - History of travel to an area with ongoing transmission, OR
  - Sexual contact with a partner who had symptoms of Zika virus disease during travel or within 2 weeks of return from an affected area

Reporting Zika Virus Diseases Cases

- Zika virus disease and congenital infection are nationally notifiable
  - CSTE approved interim case definitions in February 2016*
  - Revised definitions will be considered at June meeting
- Healthcare providers encouraged to report suspected cases to their state or local health department
- State health departments should report laboratory-confirmed cases to CDC according to CSTE case definitions
  - Pregnant women and congenital infections followed through registry
- Timely reporting allows health departments to assess and reduce the risk of local transmission or mitigate further spread

*www.cste2.org/docs/Zika_Virus_Disease_and_Congenital_Zika_Virus_Infection_Interim.pdf

Surveillance Strategies to Identify Possible Local Transmission during Mosquito Season

- Survey household members and neighbors of travel-associated cases
- Blood donor screening
- Investigation of unusual clusters of rash illness
- Expanded testing for people with no known exposure but more specific constellation of clinical findings
  - Patient with fever, rash, and conjunctivitis in area with known vector mosquitoes

Phase 2. Limited Local Mosquito-borne Transmission

- Case investigation to determine most likely place of exposure and whether cases are related
- Active surveillance to identify additional cases and define the geographic scope of the outbreak
- Perform vector assessments and control
- Prepare for increased laboratory testing demand

Surveillance Strategies to Identify Additional Cases and Define the Geographic Scope of the Outbreak

- Survey household members and neighbors (150-yard radius)
- Notify local healthcare providers and laboratories
- Syndromic surveillance for increased febrile or rash illness
- Laboratory-based surveillance for Zika or other arboviruses
- Community outreach to increase awareness
- Blood donor screening
- Mosquito surveillance

Phase 3. Widespread Local Transmission in One Area

- Case investigations to identify foci and target control
- Determine if additional cases likely represent single transmission chain or separate occurrences
- Expand active surveillance activities to further define size and scope of the outbreak
- Pregnant women screening and monitoring
- Blood donor screening (if not previously implemented)

Phase 4. Widespread Local Transmission in Multiple Areas

- Scale up surveillance and control activities based on intensity and geographic extent of transmission

Surveillance Summary

- Identify local transmission and infections in people at risk for poor outcomes
- Define affected area and populations to direct prevention and control efforts
- Phased response based size, scope, area, and timing of the outbreak
- Coordinate efforts between state/local health departments, mosquito control districts, commercial laboratories, blood collection agencies, and CDC and other federal agencies

Questions for State and Local Health Departments

- What is the risk of local mosquito-borne Zika virus transmission in your jurisdiction?
- Do you have a Zika virus surveillance and response plan?
- Do your lab have capacity to test for Zika and dengue viruses?
- Have you coordinated with local mosquito control districts and blood collection agencies?
- Do you have adequate capacity and resources for surveillance and control of *Aedes* species mosquitoes?

Acknowledgments

Thanks to CSTE and state and local health departments for your efforts and partnership during the Zika virus response

For more information, contact CDC
1-800-CDC-INFO (232-4636)
TTY: 1-888-232-6348 www.cdc.gov